

Resume

TIANZHEN HONG, PhD, PE

Office Address:

Lawrence Berkeley National Lab, MS 90-3147

1 Cyclotron Road

Berkeley, CA 94720

Phone: (510) 486-7082

Email: thong@LBL.GOV

PROFESSIONAL REGISTRATIONS AND ASSOCIATIONS

- Licensed Mechanical Engineer, State of California, M32179
- LEED Accredited Professional, U.S. Green Building Council
- Certified Energy Manager, Certified Sustainable Development Professional, Association of Energy Engineers
- Member of ASHRAE (American Society of Heating, Refrigeration, and Air-conditioning Engineers, Inc.)
- Member of IBPSA (International Building Performance Simulation Association)
- Senior Member of AEE (Association of Energy Engineers)

EDUCATION

- 09/1991--06/1994. Tsinghua University, Beijing, China
M.Eng. & Ph.D. in Building and HVACR system modeling and energy analysis
- 09/1986--07/1991. Tsinghua University, Beijing, China
B.Eng. in HVACR (Heating, Ventilation, Air-conditioning and Refrigeration), B.Sc. in Applied Mathematics
- University of Berkeley Extension, Courses on project management, quality control, product management and marketing.
- PG&E Pacific Energy Center, Energy Efficiency Educational Programs on Architecture, Lighting, and HVAC.

EMPLOYMENT

- Computational Scientist, Simulation Research Group, LBNL, Berkeley, December 2007 to present
- Senior Engineer, VisualDOE Manager and chief developer, Architectural Energy Corporation (AEC), San Francisco, June 1999 – November 2007
- Senior Engineer, Supersymmetry Services, Singapore, June 1998 to June 1999
- Postdoctoral Research Fellow, Mechanical Department, National University of Singapore, April 1996 to April 1998
- Lecturer, Department of Thermal Engineering, Tsinghua University, Beijing, China. August 1994 to March 1996
- Visiting Researcher, Building Research Establishment, UK. October 1993 to January 1994, October 1994

EXPERIENCE

- Managing projects for AEC team and contractors (CEC, PG&E, DOE, etc.) to be on-time, within-budget, and client satisfaction.
- Extensive computer modeling, simulation and energy analysis of buildings and HVACR systems using DOE-2.1E, DOE-2.2, VisualDOE, eQuest, EnergyPro, EnergyPlus, AirPack (CFD), and other tools.
- Building energy software development with Visual Basic and Fortran 66/77/90/95, including developing user requirements, architecture design, coding, integration, testing, documentation, deployment, technical support, product management and marketing.
- Development of building energy code and standards (California, ASHRAE 90.1, India)
- Application of energy efficiency technologies in design of buildings and HVACR systems
- Technical writing on energy efficiency technologies in buildings and HVACR systems

TEACHING

- Green Buildings and Building Simulation, two-day workshop, Hong Kong Polytechnic University, 2009
- Building Energy Analysis two-day VisualDOE workshop, Illinois Institute of Technology, USA, 2007

- Building energy efficient design and standards seminar, Xiamen Association of Architects and Engineers, China, 2006
- VisualDOE 4 Hands-on Simulation Workshop, SimBuild 2004, Boulder, USA, 2004
- VisualDOE 3 Hands-on Simulation Workshop, Hong Kong University, 2003
- VisualDOE 4 Hands-on Simulation Workshop, Industrial Technology Research Institute, Taiwan, 2003, 2005
- VisualDOE 4 and LEED Energy Modeling Professional Training Seminars, AEC, twice a year from 2001 to 2007

HONOR AND AWARDS

- Excellent Young Teacher Award, Tsinghua University, Beijing, 1996
- National Award on Progress in Science and Technology, China Ministry of Education, 1995
- Top 10 Outstanding Postgraduates, Tsinghua University (0.3% of postgraduates), 1994
- Outstanding Ph.D Student Award, Tsinghua University (4% of the graduates), 1994
- Award on Fundamental Science Research, Tsinghua University, 1993
- Outstanding Graduates Award, Tsinghua University (3% of the graduates), 1991

PUBLICATIONS

International Journals

- **T. Hong**. A close look at the China design standard for energy efficiency of public buildings. *Energy and Buildings*, 2009
- **T. Hong**, et al. Comparing computer run time of building simulation programs, *Journal of Building Simulation*, 2008
- **T. Hong**, et al. Comparisons of HVAC Simulations between EnergyPlus and DOE-2.2 for data centers, *ASHRAE Transactions*, 2008
- **T. Hong**, S.K. Chou, T.Y. Bong. Building simulation: an overview of development and information sources, *Building and Environment*, Vol. 35, No.4, 2000
- **T. Hong**, S.K.Chou. A design day for building load and energy estimation, *Building and Environment*, No.4, 1999
- **T. Hong**, Y. Jiang. Outdoor synthetic temperature for the calculation of space heating load, *Energy and Buildings*, No.3, 1998
- **T. Hong**, Y. Jiang. A new multizone model for simulation of building thermal performance, *Building and Environment*, No.2,1997
- **T. Hong**, Y. Jiang. IISABRE: An integrated building simulation environment, *Building and Environment*, No.3, 1997
- **T. Hong**, Y. Jiang. Stochastic weather model for building HVAC systems. *Building and Environment*, No.4, 1995
- Y. Jiang, **T. Hong**. Stochastic analysis of building thermal processes. *Building and Environment*, No.4, 1993

Technical Manuals and Guidelines (Co-author)

- ASHRAE Standard 90.1-2007 User's Manual, the ECB and Appendix G chapters. ASHRAE, 2007
- Nonresidential ACM Manual for California Building Energy Efficiency Standards 2001, 2005, 2008
- Green Building Studio Evaluation Report, PG&E Emerging Technology Evaluation, 2005-2006
- Displacement Ventilation Design Guide: K-12 Schools. CEC PIER Report: CEC-500-03-003, June 2006
- India Building Energy Code, 2004-2005
- Hawaii Commercial Building Guidelines for Energy Efficiency. State of Hawaii DBEDT, TJ164.5.B84.E7. 2004
- ASHRAE Standard 90.1-2004 User's Manual. ASHRAE, 2004
- Advanced Variable Air Volume System Design Guide. CEC PIER report #500-03-082-A-11. October 2003.
- VisualDOE 4.0 User's Manual (500 pages). AEC, 2001-2004
- Advanced Building Guidelines. Advanced Building Institute. 2001 - 2004
- Best Practice Manuals for CHPS (Collaborative High Performance Schools). CHPS. 2001- 2004

International Conferences

- **T. Hong**, C. Eley, and E. Kolderup. Two DOE-2 functions. IBPSA Building Simulation, Montreal, Canada, 2005
- **T. Hong**, C. Eley, and E. Kolderup. VisualDOE – A Green Design Tool. The 4th International Symposium on HVAC, Beijing, 2003
- **T. Hong** and Y. Jiang. Prediction of building thermal performance under random conditions. TSINGHUA-HVAC-'95, Beijing, 1995
- Y. Jiang and **T. Hong**. Stochastic analysis of overheating risk in buildings. CLIMA 2000, London, 1993
- Y. Jiang, **T. Hong** and Q. Zhou. Fault direction space method for on-line fault detection and diagnosis of air handling units, IEA ECBCS Annex 25 Workshop, Stuttgart, 1994

Core Journals of China (in Chinese)

- Y. Jiang and **T. Hong**. Integrated building design system, HV&AC, No.6, 1995
- **T. Hong**, J. Zhang and Y. Jiang. STEP technology and its application in building CAD, HV&AC, No.6, 1995
- **T. Hong** and Y. Jiang. Dimension reduction of state space building model, HV&AC, No.1, 1995
- **T. Hong**, Y. Jiang and Q. Yan. The concept of HVAC design based on the guarantee rate, HV&AC, No.6, 1994
- Y. Jiang, **T. Hong**. Stochastic analysis of building thermal processes. Tsinghua Science and Technology, No.5, 1994
- Y. Jiang and **T. Hong**. Stochastic analysis of building thermal processes: its background, method & application. HV&AC, No.6, 1993
- **T. Hong**, Y. Jiang. Outdoor synthetic calculation temperature for calculating winter heating loads. HV&AC, No.3, 1993

National Symposium of China (in Chinese)

- J. Zhang, Q. Wei and **T. Hong**. CADPower: A management information system for engineering design drawings. Proceedings of China National Conference on HVAC&R, 1996
- J. Zhang, **T. Hong** and G. Dai. The development and research on an integrated CAD system for district heating. Proceedings of China National Conference on HVAC&R, 1996
- **T. Hong** and R. Wu. CLIMATE: A database for HVAC design weather conditions. Proceedings of China National Symposium on Computer Applications in HVAC&R, 1995
- Z. Xu and **T. Hong**. Psychometric chart for HVAC under Microsoft Windows. Proceedings of China National Symposium on Computer Applications in HVAC&R, 1995
- Y. Jiang, **T. Hong** and J. Zhang. IISABRE: Intelligent integrated system for the analysis of building thermal environment. Proceedings of China National Conference on HVAC&R, 1994
- Q. Yan and **T. Hong**. Numerical simulation study of two-phase thermosiphon heat exchanger. Proceedings of China National Conference on HVAC&R, 1992
- Y. Jiang, **T. Hong** and R. He. Feasibility study of room air-conditioner with evaporative cooling. Proceedings of China National Conference on HVAC&R, 1992

REFERENCED PROJECTS

Lawrence Berkeley National Laboratory, USA

- 2008-present: EnergyPlus development, team member
- 2008-2009: Extending EnergyPlus analysis capability for California building energy standards development and compliance calculations, acting PI
- 2008-2009: Integrated building controls – collaborative project between Philips Research NA and LBNL
- 2009: Evaluation of energy savings potential for demand control ventilation in office buildings in California
- 2008-2009: Evaluation of energy and environmental performance of electrochromic windows. Acting PI
- 2008-2009: Evaluation of energy and environmental performance of thermochromic windows. Acting PI
- 2008: Comparing HVAC simulations between EnergyPlus and DOE-2.2 for data centers
- 2007-2008: Assessment of energy impacts of windows technologies for commercial buildings. Co-PI

Architectural Energy Corporation (AEC, former Eley Associates), USA

Software Development Projects

- 2006-present: Development of VisualDOE 5.0, AEC, Project manager, chief developer
- 2006-2007: EnvStd 6.0 – A compliance tool for ASHRAE 90.1-2007. Chief developer
- 2005-2006: Calibration of residential energy database for PLACE 3S, CEC. Project manager/engineer
- 2004-2005: Development of CVisualDOE - a Chinese version of VisualDOE for Taiwan. Project manager/engineer
- 1999-2006: Development of VisualDOE 3.0 and 4.0. Chief developer, project and product manager
- 2000-2005: EnvStd 4.0/5.0 – A compliance tool for ASHRAE 90.1-2001/2004. Chief developer.
- 2003-2004: Live compliance forms for building envelope, lighting and HVAC for Oregon state building energy code. Chief developer
- 2001-2003: A Windows interface for EnergyPlus – A feasibility study.
- 2002-2003: Development of PLACE 3S Energy Database. CEC. Chief developer.
- 2001-2002: EnvStd for Seattle - a building envelope compliance tool for city of Seattle. Chief developer.
- 2001-2002: CodeComp - a building energy code compliance tool for state of Oregon. Chief developer.
- 1999-2000: ResTool - a comprehensive energy analysis tool for low-rise residential buildings. CEC PIER project. Chief developer.
- 1999-2000: An optimizer of HVAC central plant design based on DOE-2.2 for SCE (Southern California Edison). Chief developer.

Software Testing and Evaluation Projects

- 2006: ASHRAE 140-2004 tests for LBNL DOE-2.1E version 119. AEC.
- 2004-2005: Evaluation of EnergyPlus as a compliance tool for California building energy efficiency standards. PG&E.
- 2005-2006: Evaluation of Green Building Studio. PG&E. Principal investigator, project manager
- 2004: Testing of HVAC portion of ComCheck-EZ. PNNL.

Building Energy Efficiency Study Projects

- 2005-2007: Development of a DOE-2 function to model Mitsubishi VRFZ and Daikin VRV systems, project manager/engineer
- 2004-2006: Distributed Energy Storage for Direct-Expansion Air Conditioners. Ice Energy. Project manager/engineer
- 2004-2005: Thermal displacement ventilation for schools. CEC.
- 2001-2005: Parametric runs and case studies for the Exceeding Title 24 course. PG&E and SCE.
- 2004-2005: A simulation case study of an office building with CVisualDOE for Taiwan. ITRI.

- 2001-2003: Advanced VAV System Design Guide. CEC PIER project.
- 2001-2003: Hawaii energy efficiency guidelines for commercial buildings. Hawaii.

Building Sustainable Design Assistant Projects

- 2007: East Contra Costa County Courthouse LEED energy modeling and Savings By Design analysis, project manager/engineer
- 2007: Google Building 1667 laboratory energy efficiency study, Savings By Design analysis, project manager/engineer
- 2005-2006: Comfort and energy analysis of San Francisco County Jail, project engineer
- 2002: Building energy analysis for Terminal 2 of Oakland International Airport, project engineer
- 2002: Building energy analysis for Fresno Junile Detention Facility – Saving By Design project
- 2002: LEED energy modeling for North Clackamas High School, project engineer
- 2001: Feasibility study of photovoltaic systems for offices and schools in Portola, Brawley and Santa Barbara, project engineer
- 1999-2005: More than a dozen other projects evaluating life cycle cost of energy efficiency measures for schools, hospitals, offices, retails, libraries, courthouses, and airports. Energy efficiency measures cover building envelope, high performance windows, lighting and daylighting, HVAC systems, central plant, and domestic water heating.

Building Energy Code and Standard Development Projects

- 2006-2007: ASHRAE Standard 90.1-2007 User's Manual.
- 2005: PG&E CASE (Code and Standard Enhancement) for California building energy efficiency standard Title 24-2008.
- 2004-2005: Development of India building energy code. IIEC (International Institute of Energy Conservation).
- 2000-2007: Updates to California building energy efficiency standards Title24-2001, 2005, and 2008
- 2004: ASHRAE Standard 90.1-2004 User's Manual.
- 2001: PG&E CASE Residential – Time dependent value analysis of water heating energy for Title 24-2005.

Supersymmetry Services (Electric Eye), Singapore

- 1999: Studies of maximum free cooling for wafer fabs in Phoenix, Dallas, San Diego, Worcester, Austin and Eugene
- 1999: Improvement of energy efficiency for Shanghai Ocean Aquarium through reviewing the M&E design
- 1999: Energy efficiency study for Grand Hyatt Singapore, million-dollar project
- 1999: Optimization of chilled water systems for TI-Acer Taiwan using VisualDOE
- 1999: Tendering of district cooling system project for Changi business park
- 1999: Tendering of cleanroom facilities for LCD manufacturing plants at Malaysia
- 1998-1999: Energy study of air handlers for ST Building
- 1998-1999: Design of energy efficient LED lighting systems for growing abalone. Collaborate with JIFAS Japan.
- 1998-1999: Intelligent pumping system for highrise buildings, million dollar project funded by EDB
- 1998: Audit and design of heat exchangers for Becton Dickinson
- 1998: Feasibility study of LED technology for traffic lights
- 1998: Optimization of outside air handler performance
- 1998: CFD modeling of airflow performance of cooling towers for SGS-Thomson

National University of Singapore, Singapore

- 1996-1998: Developing a performance-based building energy standard for Singapore
- 1996-1998: Developing PEAKLOAD for estimating design cooling loads of buildings

Building Research Establishment, UK

- 1993-1995: Knowledge based system for building performance assessment
- 1993-1994: Stochastic analysis of building thermal performance

Tsinghua University, Beijing, China

- 1995-1998: IEA (International Energy Agency)-ECBCS Annex 30 Bringing simulation to application.
- 1993-1996: Intelligent integrated system for the analysis of the building thermal environment. Tsinghua Tongfang Corporation.
- 1994-1995: IEA-BCS Annex 25 Real time simulations of HVAC systems for building optimization, fault detection and diagnosis.
- 1992-1993: IEA-BCS Annex 21 Calculation of energy and environmental performance of buildings.
- 1989-1992: Stochastic analysis of building thermal performance. China Natural Science Foundation.
- 1988-1990: New methods to preserve Chinese cabbages. Beijing municipality.
- 1988-1996: Development of BTP – A calculation engine for building energy simulations, now as kernel of DesT, a popular energy simulation tool used in China.